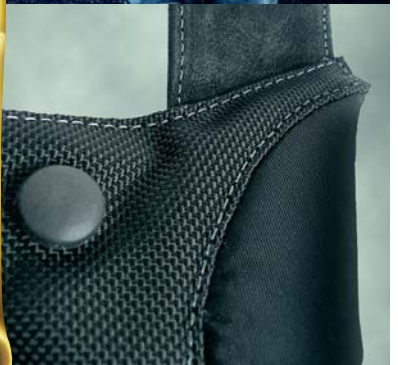
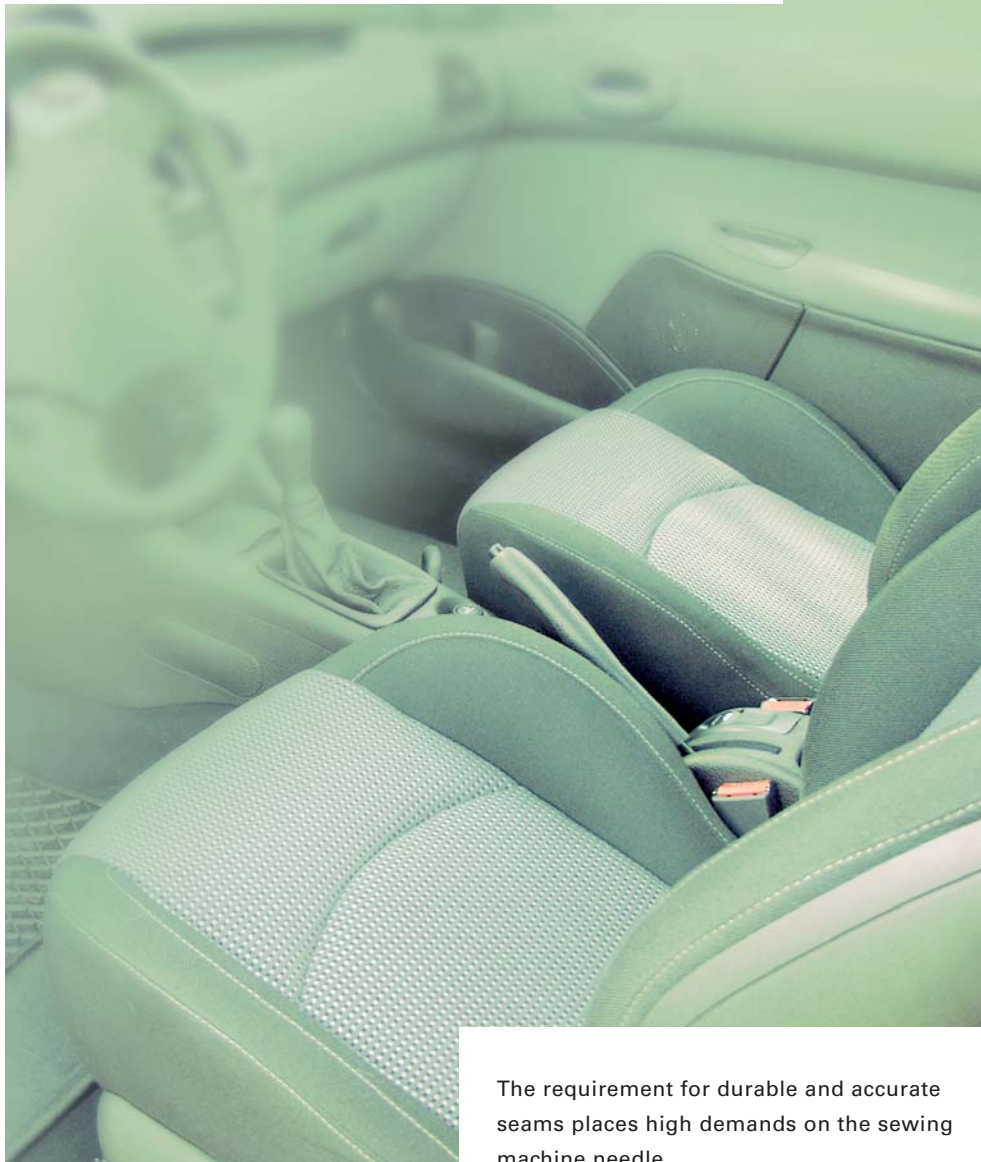


SPECIAL APPLICATION
NEEDLE SAN® 5 – DEVELOPED
FOR THE SEWING PROCESS OF
TECHNICAL TEXTILES.



The requirement for durable and accurate seams places high demands on the sewing machine needle.

More and more often technical textiles require a varied combination of different materials (frequently coated or bonded with foam material).

The Groz-Beckert SAN® 5 needle was developed to eliminate the known application problems related to the processing of such materials.

- Needle deflection
- Stitch hole sticking
- Irregular seam appearance.

GEBEDUR®

The titanium nitride coated needle of Groz-Beckert.

THE SAN® 5 GEBEDUR® NEEDLE AND ITS ADVANTAGES

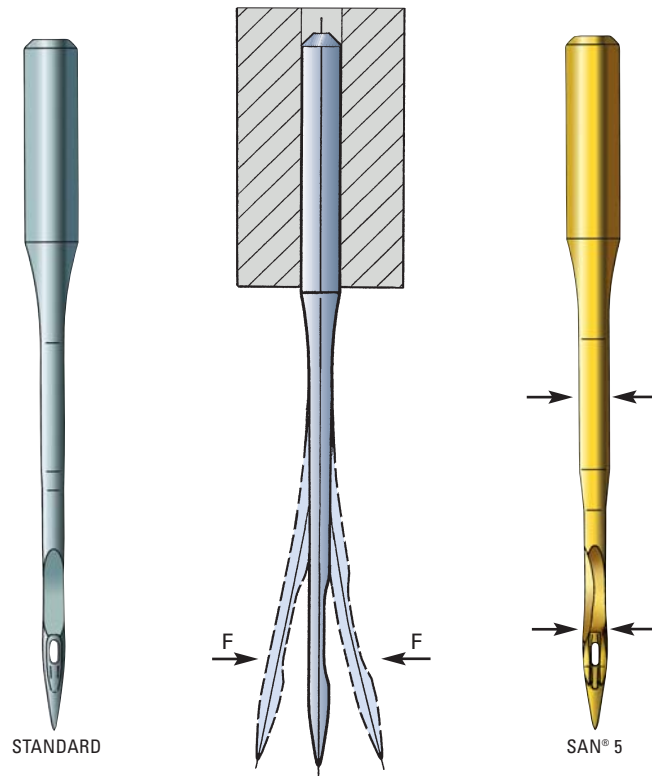
Needle deflection

Very often technical textiles are constructed from very hard materials. High penetration forces are the rule which often leads to a strong needle deflection.

Results can be:

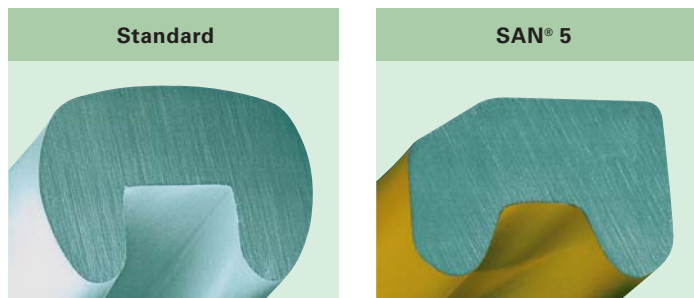
- Skipped stitches
- Point damage
- Material damage
- Thread splicing
- Thread breaking
- Needle breakage

To avoid these problems, a new blade design was developed for the Groz-Beckert SAN® 5. The stipulation was high needle stability in combination with an optimum of penetration work.



Cross section of the scarf

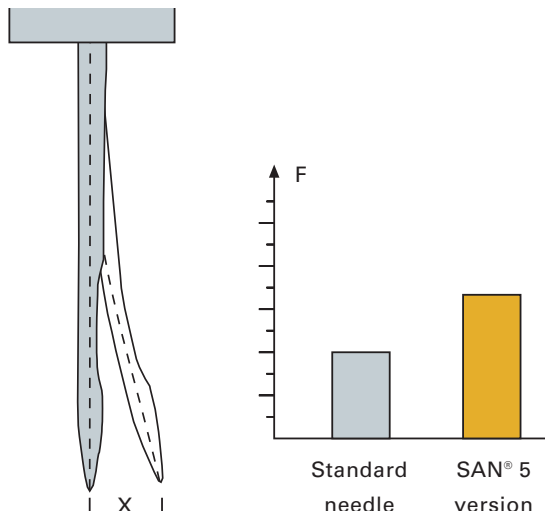
The higher stability of the Groz-Beckert SAN® 5 in the scarf area becomes visible in this cross section view of the scarf. The lateral scarf chamfer prevents damage to the hook point.



Bending resistance

The special design of the entire working area of the Groz-Beckert SAN® 5 needle results in a clearly higher bending resistance, in comparison to a standard needle.

A needle deviation of "X" with SAN® 5 needles requires approximately 25% higher force than with standard needles.

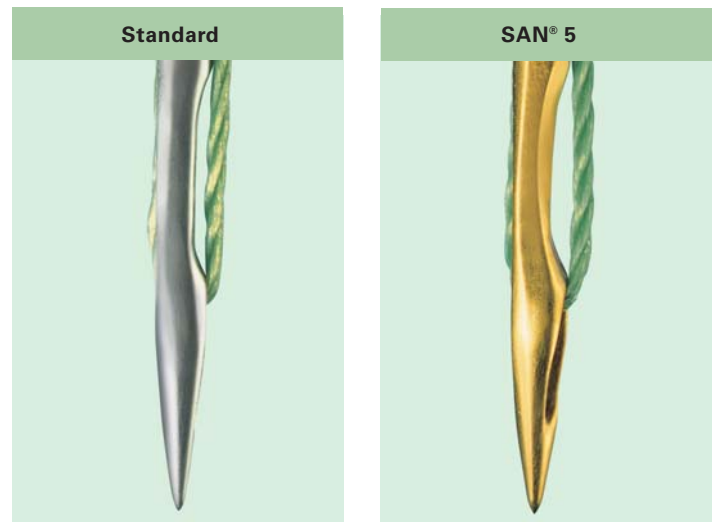


Improved loop guidance

The Groz-Beckert SAN® 5 needle has a deep scarf and a special eye design. Even with a poorly formed loop, these features guarantee a greater space between the thread and the needle, ensuring loop pick-up by the hook. This leads to a higher security during the loop pick-up.

Results:

- **Less skipped stitches**
- **Less thread breakage**

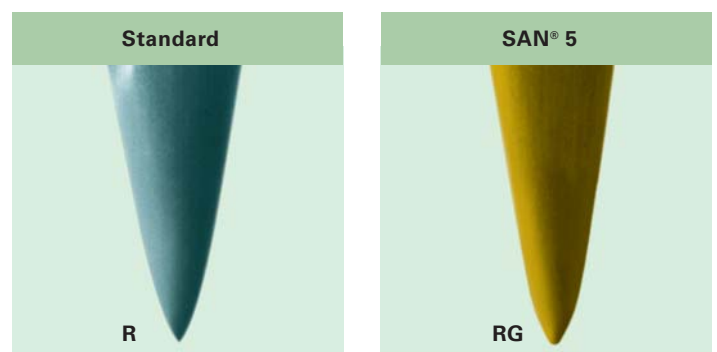


Ideal shape of needle point

The standard point of the Groz-Beckert SAN® 5 needle is the RG point. This point has proven itself in many applications. Due to its special shape, it wears less and protects the sewing material.

Results:

- **Less material damage**
- **High process security**



Adapted stitch hole opening

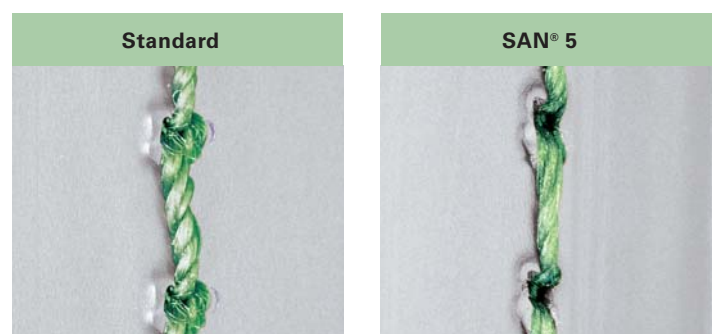
Certain synthetic materials tend to melt and stick to the needle during the sewing process. The melted particles are pulled through the stitch hole by the needle, and remain on the surface of the stitch hole, and on the thread. The consequence is a less attractive seam. The specially adapted blade geometry of the Groz-Beckert SAN® 5 needle greatly reduces this problem.

This means:

- **Visually improved seam quality**

The specially adapted shape of the Groz-Beckert SAN® 5 needle blade creates the perfect stitch hole openings in the fabric, guaranteeing:

- **Well balanced pulling-in of the thread**
- **Regular stitch pattern**
- **Improved seam durability**



Thread loading

Today almost exclusively Z-twisted (left twist) sewing threads are used. When sewing backwards the thread lies over the right edge of the needle eye. The edge of the eye and the thread twisting run parallel at this time. During the needle downstroke the thread is pushed together by the edge of the eye.

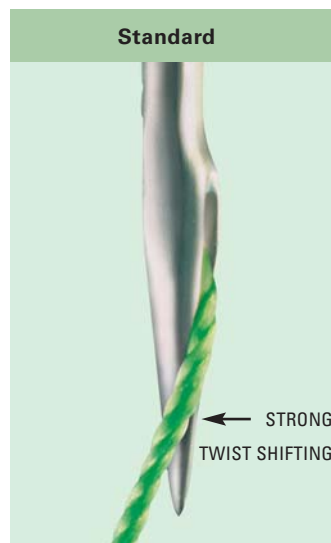
A "twist shifting" in the thread arises.



Thread twist shifting

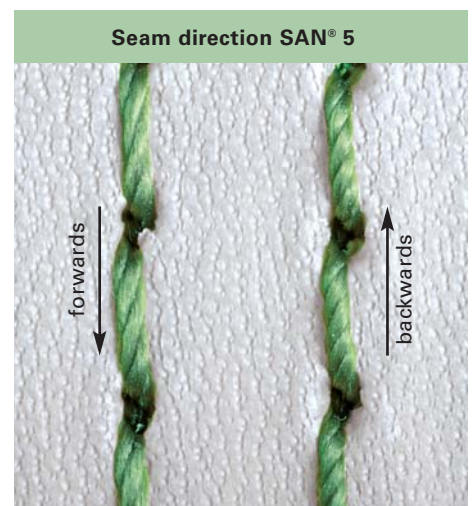
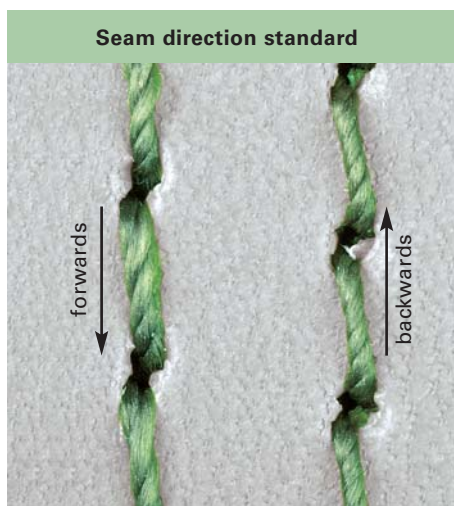
The Groz-Beckert SAN® 5 needle has a specially designed upper point groove. The edges of the eye lie deeper into the direction of the point. All thread-sliding areas are very well-rounded and polished. The needle thread slides protected over this specially shaped area.

The "twist shifting" in the thread is clearly reduced when compared to a standard needle.

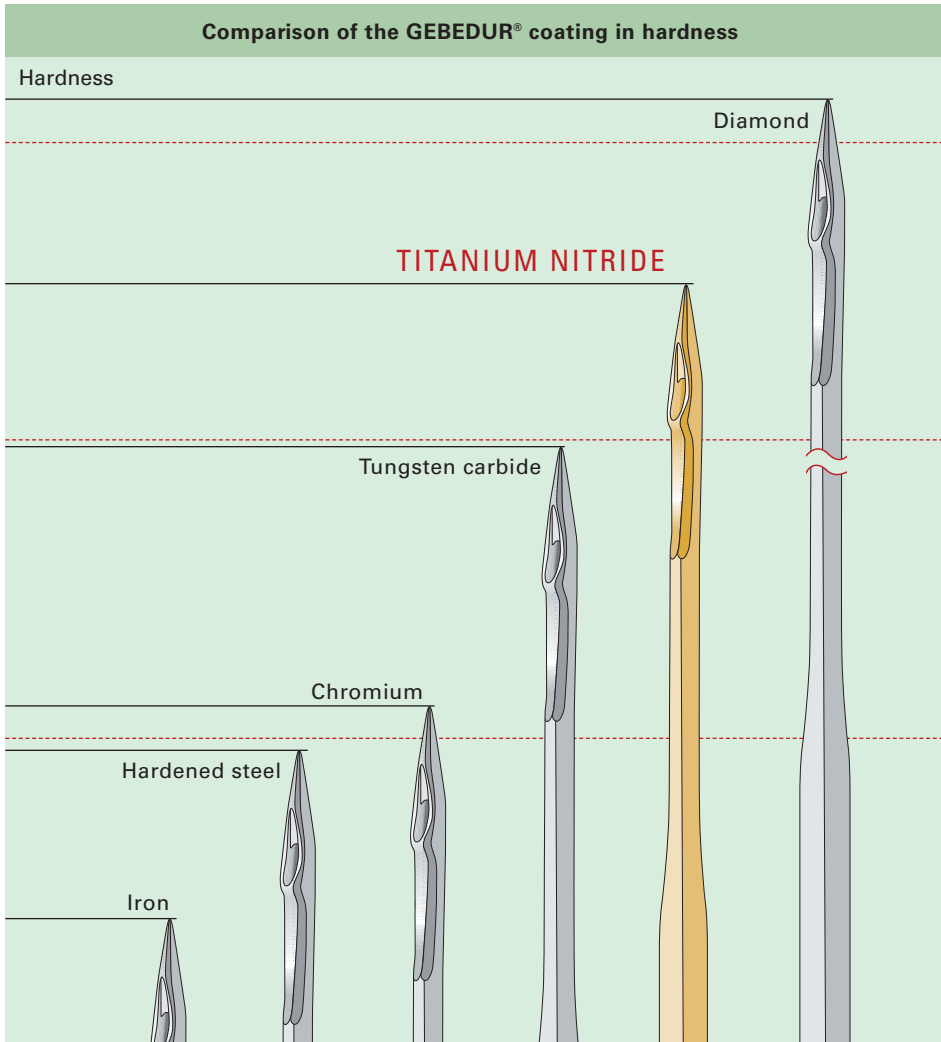


Result

The Groz-Beckert SAN® 5 needle produces a visibly more constant seam appearance in comparison to a standard needle.



GROZ-BECKERT – THAT SUBTLE DIFFERENCE



GEBEDUR®

The titanium nitride coated needle of Groz-Beckert.

The titanium nitride coating provides the Groz-Beckert SAN® 5 needle with high protection from wear and tear, as well as damage.

Feedback from industry confirms the progress of the Groz-Beckert SAN® 5 GEBEDUR®. Especially when sewing car seats or technical textiles, the Groz-Beckert SAN® 5 GEBEDUR® achieves a longer working time.

The results are:

- **High seam quality**
- **High productivity**

THE RESULTS OF THE SAN® 5 DEVELOPMENT

The advantages

- High productivity due to less machine downtime.
- Reduced production costs.
- More security against skipped stitches.
- High protection of the sewing fabric.
- Extremely tight adjustment of the looper to the needle is possible.
- Low needle consumption.
- High protection against needle wear by GEBEDUR®.
- Optimum protection of the hook point.

